

MEDIA BRIDGE METHOD AND APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention;

5 The invention relates to a bridge between tangible media, such as printed media, and computer media. More specifically, the invention is a method and apparatus for hybridizing the subject matter of tangible media with related subject matter in media stored on a computer.

2. Description of the Related Art:

10 In the early 1980s, the popularity of personal computers gave rise to the catch-phrase "paperless office" which refers to an environment in which all records are maintained in digital form on computer readable media as opposed to being kept as hard copies on paper. However, the utility and convenience of paper based records has never been matched by computer media. Thus, even when records are maintained in computer readable format, hard copies are often printed out for review.

15 Recent advances in communication, the Internet in particular, have facilitated on-line distribution of various information such as articles, advertisements, and even entire books. The Internet is a worldwide network of computers linked together by various hardware communication links all running a standard suite of protocols known as TCP/IP (transmission control protocol/Internet protocol). The growth of the 20 Internet over the last several years has been explosive, fueled in the most part by the widespread use of software viewers known as browsers and HTTP (hypertext transfer protocol) which allow a simple GUI (graphical user interface) to communicate over the Internet. Browsers generally reside on the computer used to access the Internet, i.e. the client computer. HTTP is a component of TCP/IP and provides users access to 25 files of various formats using a standard page description language known as HTML (hypertext markup language), and more recently XHTML (extensible hypertext markup language). The collection of servers on the Internet using HTTP has become known as the "World Wide Web" or simply the "Web."

30 Through HTML, and interactive programming protocols, the author of a particular Web page(s) is able to make information available to viewers of the Web page(s) by placing the Web page(s) on an Internet Web server in HTML format. The

network path to the server is identified by a URL (Uniform Resource Locator) and, generally, any client running a Web browser can access the Web pages by the URL.

The Web has become ubiquitous in businesses and homes because it has proven to be convenient for various applications, such as news and data delivery, 5 conducting banking and investment transactions, and the like. The Web and its authoring, transmission, and display protocols, such as browsers, HTML, CGI (common gateway interface), Active Server PagesTM, and JavaTM, have become a worldwide standard for information exchange.

However, even the convenience of the Web and the advances in the resolution 10 and size of computer displays has not advanced computer media to the level of comfort and convenience of print media in the eyes of most people. For example, computers and computer displays are too bulky to use as a media for reading the morning newspaper. Some modern computers are very small but generally the displays thereon are also small and have low resolution as compared to the typical 15 magazine or newspaper. Also, there is a certain tactile feel to printed media, such as a glossy magazine or a newspaper, which many people prefer over a computer display.

Further, the Web is analogous to the world's biggest library without a card catalogue. A wealth of information is available but difficult to find. Search engines only serve to reduce the amount of material that the user must manually sift through 20 to find the desired document. Also, from an advertiser's standpoint, printed media, such as a magazine, is desirable because it often remains in the reader's possession, in a visible place, for many days and thus advertisements in printed media often are more effective than web site advertisements which are constantly changing and depend on search engines and other unreliable methods for being viewed. 25 Specifically, search engine criterion can change in a dynamic, and even fickle, manner and thus advertisements on the Internet are not viewed in a reliable manner. Accordingly, even the Web and proliferation of laptop and handheld computing devices has not displaced printed media in many instances.

As disclosed in U.S. patent 5,956,048, it is well known to download books 30 from a network to a portable or handheld computer. Also, many printed articles and advertisements include a printed URL, i.e. a Web address, to permit readers to access additional information about the article or advertised product by manually accessing

the Web. Further, it is well known to download coupons from a computer network, print the coupons on a printer, and take the printed coupons to a retail store for redemption. While each of these technologies incorporates certain aspects of print media and computer media separately, none of these technologies hybridize print media and on-line media in a seamless manner.

5

SUMMARY OF THE INVENTION

It is an object of the invention to hybridize tangible media with computer media.

It is another object of the invention to combine the flexibility of computer media with the tactile feel and presence of tangible media.

10

It is another object of the invention to distribute coupons and other promotions in a flexible manner.

It is another object of the invention to target promotional media accurately to persons who have expressed an interest in related subject matter.

15

It is another object of the invention to facilitate access to on-line archived content.

It is another object of the invention to facilitate location of desired information on a network such as the Internet.

20

To achieve these and other objects, the invention provides a seamless bridge or hybridization between tangible media (i.e., media discernable by the human eye without the need for a computing device) and computer media (i.e., media that is readable by a computing device to provide a display discernable by the human eye).

25

A first aspect of the invention is a computer architecture for providing a bridge between tangible media and computer media comprising a bridge server computer system including a database and a server control program, a client computer system including a bridge control program and an input device adapted to receive a bridge code associated with a tangible media object, and a communications channel coupling the bridge server computer system and the client computer system. The bridge control program is operative to send a bridge code entered through the input device from the client computer system to the bridge server and the server control program is

operative to query the database based on the bridge code and execute action commands contained in the database in correspondence to the bridge code.

A second aspect of the invention is a method for bridging tangible media and computer media comprising the steps of creating a database of bridge codes and action commands corresponding to the bridge codes, inputting a bridge code associated with a tangible media object into a client computer system, communicating the bridge code from the client computer system to a bridge server, querying the database based on the bridge code, and executing action commands stored in the database in correspondence to the bridge code.

BRIEF DESCRIPTION OF THE DRAWING

The invention is described through a preferred embodiment and the attached drawing in which:

Fig. 1 is a block diagram of a computer architecture of the preferred embodiment;

Fig. 2 illustrates an example of a tangible media object of the preferred embodiment.

Fig. 3 is a flowchart of the bridging method of the preferred embodiment; and

Fig. 4 is a table representing the contents of the database of the preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of media bridge system 10 is illustrated in FIG. 1.

Client computer system 30, executing browser application 34 that supports the HTTP protocol, is connected typically through an ISP (Internet Service Provider), to the Internet 100. For example, client computer system 30 can be coupled to the ISP via a conventional dial up connection using a modem or through a broadband connection such as ISDN (Integrated Services Digital Network), a cable modem, or a DSL (Digital Subscriber Line) connection. Bridge server computer system 20 is also coupled to the Internet 100 in a known manner. Bridge server computer system 20 executes a Web server control application 24, known as an HTTP server application, stored in a memory. In addition, bridge server computer system 20 can have at least

one, though typically many, Web pages stored in a memory device thereof as files in HTML format and/or other formats. Further, bridge server 20 includes database 22 stored in the memory device as described in detail below.

Content servers 40 can also be connected to client computer system 30 and bridge server computer system 20 through the Internet 100. In the preferred embodiment, the Internet 100 serves as a communication channel. However, any type of communication channel can be used. For example, the communication channel can be a LAN (local area network), a WAN (wide area network), or the like using any type of communication hardware and protocols. Communication can be accomplished over electric cable, fiber optic cable, any other cable, or in a wireless manner using radio frequency, infrared, or other technologies.

Client computer system 30 of the preferred embodiment includes computer 32, a personal computer for example, coupled to the Internet 100 and PDA (personal digital assistant) 38 adapted to be selectively coupled to computer 32 through local communications channel 39. PDA 38 preferably is a handheld device, such as devices sold under the tradename PALM PILOT™ or devices sold under various tradenames adapted to run the WINDOWS CE™ operating system. However, PDA 38 can be any type of portable computing device, thin client, or the like. Computer 32 can request a display of a Web page stored on bridge server 20 by issuing a URL request through the Internet 100 to bridge server computer system 20 in a known manner. A URL consistent with the present invention may be a simple URL of the form:

<protocol identifiers>://<server path>/<web page path>

A "protocol identifier" of "http" specifies the conventional hyper-text transfer protocol. A URL request for a secure Internet transaction typically utilizes the secure protocol identifier "https," assuming that browser 34 and Web server control application 24 are presumed to support and implement the secure sockets layer. The "server path" is typically of the form "prefix.domain," where the prefix is typically "www" to designate a Web server and the "domain" is the standard Internet sub-domain.top-level-domain of bridge server computer system 20. The optional "web page path" is provided to specifically identify a particular hyper-text page maintained on bridge server computer 20 content servers 40, or another server.

In response to a received URL identifying an existing Web page, bridge server computer system 20 can return the Web page, subject to the HTTP protocol, to client computer system 30 for display on client computer system 30. This Web page typically incorporates both textural and graphical information including embedded 5 hyper-text links that permit the user of client computer system 30 to readily select a next URL or send other data over the Internet 100.

The URL issued from client computer system 30 may also be of a complex form that identifies a CGI program (or script) on bridge server computer system 20. The CGI program, permits interactivity between client computer system 30 and bridge 10 server computer system 20 through the Web via HTTP. CGI is a standard for external gateway programs to interface with information servers, such as HTTP or Web servers. A plain HTML document that the Web server delivers is static, which means it doesn't change. A CGI program, on the other hand, is executed in real-time, so that it can output dynamic information, such as the results of a database query. A HTML 15 hyperlink reference that identifies a CGI program is typically of the form:

```
<form action=http://www.vendor.com/cgi-bin/bridge.cgi method = post>
```

A hyper-text link of this form directs the execution of the bridge.cgi program on an HTTP server, such as bridge server computer system 20 in response to a command from client computer system 30. In the preferred embodiment, bridge.cgi is 20 a routine in server control application 24 of bridge server computer system 20 which queries database 22 and executes instructions based on the query result, as described in detail below.

PDA 38 of client computer system 30 includes input device 36 for inputting a bridge code 154 (see Fig. 2 and the description below) into client computer system 30. Input device 36 of the preferred embodiment is a bar code scanner. However, input 25 device 36 can be a keypad, keyboard, bar code reader, text scanner, image scanner, set of thumb-wheels, or any other device for inputting the bridge code. The bridge code is an identifier, such as a number, a word, alpha-numerics, an image, or the like, for identifying a tangible media object in media bridge system 10. The phrase "tangible 30 media object," as used herein, refers to any object of tangible media, such as a newspaper article, a magazine article, an advertisement, a book, portions thereof, or the like.

Fig. 2 illustrates an example of a tangible media object. Tangible media object 150 of the preferred embodiment is in the form of an article in a newspaper, magazine, or the like. Tangible media object 150 includes body 152 having a title, a byline, text, and an illustration. Tangible media object 150 also includes bridge code 154, in the form of a bar code in the preferred embodiment, and bridge code instructions 156 as text or some other indicator. Conventionally, if a person coming across an article desires to save the article, the person will save the magazine or newspaper, tear the article out of the magazine or newspaper, or photocopy the article. However, these procedures all require that the person catalog or otherwise keep track of the article or copy for later review. Also, these procedures do not permit the article to be edited or otherwise manipulated digitally. On the other hand, the user could scan the article using a known image scanner and possibly convert the scanned image into text with OCR (optical character recognition) software. However, this procedure is tedious.

In the preferred embodiment, the person need only input bridge code 154 into PDA 38, as indicated in bridge code instructions 156 to obtain a digital copy of the article. Fig. 3 illustrates the procedure for obtaining a copy of the article of tangible media object 150. In step A, the user locates tangible media object 150. For example, the person may be reading a magazine and find tangible media object 150 containing an article of interest. In step B, the user reviews bridge code instructions 156 to ascertain what actions will be accomplished by entering bridge code 154 into PDA 38. In this example inputting bridge code 154 will eventually result in the user obtaining a copy of the article. However, it will become apparent below that one or more of many actions can occur as a result of inputting bridge code 154.

Assuming that the action indicated in bridge code instructions 156 is desirable to the user, the user then inputs bridge code 154 by scanning bridge code 154 into PDA 38 using input device 36 in step C. For example, input device 36 can have a wand or raster scanning laser for scanning the bar code of bridge code 154 in a known manner. As a result of step C, bridge code 154 is stored in PDA 38 in accordance with bridge control program 37. Note that bridge control program 37 can be loaded and executed using the conventional user interface of PDA 38. Note that PDA 38 is portable and thus can be readily available at all times to make the collection of bridge

code 154 in steps A through C convenient. For example, collection of bridge code 154 can be accomplished while the person is away from their office, and even on an airplane or at sea, because a continuous connection with computer 32 is not required.

In step D, the user decides if the previously scanned bridge code 154 is the last code to be inputted at this time. If not, the procedure can return to step A for execution of steps A through D for any other bridge codes to be scanned. For example, tangible media object 150 may have plural bridge codes and plural corresponding bridge code instructions. One bridge code may be used to obtain a copy of the article, as described above, and another bridge code may be used to view or obtain copies of related articles. Still another bridge code can be used to purchase an item discussed in the article by logging in to a vendor server. Bridge code 154 can be used to accomplish virtually any function related to tangible media object 150, as discussed in greater detail below. Of course, steps A through D can be executed for plural tangible media objects.

When all desired bridge codes have been scanned into PDA 38, scanned bridge codes can be uploaded from PDA 38 to computer 32. Ordinarily, the uploading will be accomplished the next time the person returns to their office or other location of computer 32. At this time, PDA 38 is placed in communication with computer 32 through local communication channel 39 in step E. Local communication channel 39 can include a docking station of PDA 38 and a serial link, USB (universal serial bus) link, infrared link (such as an IrDA link), a wireless link such as "bluetooth," or any other hardware and/or software for establishing communication between PDA 38 and computer 32. In step F, the scanned bridge codes are uploaded from PDA 38 to computer 32 in accordance with bridge control program 37 of PDA 38 and bridge control program 35 of computer 32 using standard operator interfaces for initiating the upload.

As a result of step F, the scanned bridge codes are stored in computer 32 for uploading to bridge server 20 over the Internet 100. As noted above, computer 32 and bridge server computer system 20 are both connected to the Internet 100. The connections to the internet can be continuous or dial up. In the case of a dial up connection, computer 32 connects to the Internet 100 prior to step G. Once connected to the Internet 100, computer 32 can send a command to bridge server computer

system 20, in the form of a complex URL or other command containing the appropriate bridge code or codes, to search database 22 for action commands associated with the bridge codes stored in computer 32. For example, computer 32 can send a complex URL, having a CGI program request or the like, to bridge server computer system 20, in step G, in response to instructions in bridge control program 35.

In response to the command or plural commands from computer 32, bridge server computer system 20 will query database 22 to find the action commands indicating actions to be taken in response to each bridge code in step H. The action commands in database 22 for each bridge code should correspond to the bridge code instructions for the particular bridge code. For example, in the case of bridge code 154 illustrated in Fig. 2, the action command in database 22 will include instructions for causing a computer media copy of the article in tangible media object 150 to be downloaded to computer 32. The computer media copy of the article in tangible media object 150 can be stored on bridge server computer system 20 or on another computer coupled to the Internet 100, such as one of content servers 40. In the case of the copy being stored on one of content servers 40, the action command in database 22 includes instructions for addressing content server 40 and causing the appropriate download to computer 32. Once again, this can be accomplished through transmission of a complex URL with a CGI program request from bridge server computer system 20 to content server 40.

In step I, the action indicated by action commands stored in correspondence with bridge code 154 in database 22 (downloading a copy of the article to computer 32 in this case) is taken. In step J, it is determined if there are additional bridge codes to be uploaded from computer 32 to bridge server computer system 20. If not, the procedure ends. If so, the procedure returns to step F. It can be seen that, in the preferred embodiment described above, the user merely scanned in a bridge code from a tangible media object to automatically receive a computer media copy of the article in the tangible media object. However, the actions accomplished in response to scanning of the bridge code need not be limited to merely obtaining a copy of the article and in fact can take many forms, as described below.

For example, the action commands stored in database 22 can cause the automatic retrieval and download of a recipe for a meal featured in the article or advertisement of tangible media having a bridge code. Further, the action commands stored in database 22 can cause the automatic retrieval and download of a coupon for a product featured in the article or advertisement of tangible media having a bridge code. The coupon can be printed and taken to a store or the coupon can be retained in computer 32 or PDA 38 of client computer system 30 for download at the point of sale into a vendor computer or thin client. The coupon can include various conditional information such as expiration date data, data indicating a particular store or Web site that can accept the coupon, data indicating time increments through which the discount increases or decreases, data indicating the identity of the user, and the like. The coupon can be redeemed at a conventional "bricks and mortar" retail store or at a Web site over the Internet 100 or another network.

The action commands in database 22 can cause a Web page to be displayed on client computer system 30 which provides links to information related to tangible media object 150 from which bridge code 154 was scanned. For example, bridge code 154 can be in or on a book and the command instructions can cause a Web page to be displayed providing links to Web sites devoted to the author of the novel or other novels by the same author.

Fig. 4 is a representation of a portion of database 22. Of course, database 22 can be stored in computer readable form in known database formats, such as Microsoft EXCEL™, and can include action commands as machine code or the like. However, Fig. 4 represents database 22 as a look-up table having English language action commands 158 for the purpose of explanation. As illustrated in Fig. 4, when bridge code 154 having the value 42709 10028 is scanned, a computer media copy of the article from tangible media 150 will be downloaded to client computer system 30. Similarly, when bridge code 154 having the value 41370 10038 is scanned, a computer media coupon for a product featured in tangible media 150 will be downloaded to client computer system 30. When bridge code 154 having the value 54219 23400 is scanned, a Web page having links related to tangible media 150 will be displayed on client computer system 30. When bridge code 154 having the value 67213 14572 is scanned, a vendor Web page for purchasing goods or services

described in tangible media 150 will be displayed on client computer system 30. When bridge code 154 having the value 67201 15427 is scanned, a Web page containing links to scores of a game discussed in tangible media object 150 and related interview videos is displayed on client computer system 30. When bridge 5 code 154 having the value 47290 28100 is scanned, a Web page having links for travel and booking information for a destination described in tangible media object 150 is displayed. When bridge code 154 having the value 54912 43200 is scanned, a Web page containing links to a review and video preview of a move discussed in tangible media object 150 is displayed.

10 Database 22 can be maintained and updated by a service provider to provide the desired results in response to any bridge code. The action commands can include instructions to utilize a particular folder or directory on client computer system 30 to facilitate organization of material.

15 It can be seen that the invention bridges the gap between tangible media and computer media by coupling the two media in an integrated manner. However, the invention does not diminish the power of tangible media for persons not having computer access or otherwise not desiring to utilize the invention. Further, the invention is easily integrated in both the tangible media and the computer media without substantial changes to the creation and distribution of the two media. For 20 example bridge codes can easily be inserted into tangible media and action commands can be placed in the database to call up existing contents on the Web. The bridge server can log all transactions conducted as a result of action commands for the purpose of billing vendors, developing customer profiles, or the like. Coupons and the like can be exclusive to the bridge codes, i.e. not available elsewhere and thus can 25 facilitate determination of the effectiveness of an advertisement in the form of a tangible media object.

30 The client computer system of the preferred embodiment includes a PDA and a computer coupled to the Internet. However, the client computer system can have any configuration that permits entry of bridge codes and communication with the bridge server computer system. For example, the client computer system can be merely a PDA or other thin client coupled to the Internet through a wired or wireless link. Also, the client computer system can be a computer, such as a personal

computer, coupled to the Internet through a wired or wireless link without the need for the PDA. Of course, in such a case, the input device will be on the computer. The communications channel in the preferred embodiment is the Internet. However, any communications channel can be used. The bridge server computer system can include 5 plural computers at one location or at plural locations. The various control programs can be written in any appropriate language and will be apparent to one of ordinary skill in the art based on the disclosure herein.

The input device can assume any form. For example, the bridge codes can be scanned with an optical scanner, inputted manually through a keyboard, keypad, 10 thumbwheels or the like, read from a magnetic strip embedded in the tangible media object, or in any other manner. The bridge codes can be inputted into a smart card that forms a portion of the client computer system and thus obviate the need to have a thin client or computer at the point of inputting the bridge code. For example, the

bridge code can be loaded to the smart card from a point of sale display and 15 subsequently downloaded to a computer. The content servers can be associated with any party and can take any form. The bridge code can be a number, an alphanumeric, a word, a symbol, combinations thereof or any other identifying code. The bridge code instructions can include, text, an icon, or any other indication of an action corresponding to the bridge code. Of course, the bridge code instruction is optional.

20 The bridge code and bridge code instructions can be combined into a single code/symbol that identifies the tangible media object to the bridge server and is discernable by the user to indicate an associated action.

In the preferred embodiment, the database query is executed at the bridge 25 server, however, the database, the query, and any other processing can be distributed amongst the client computer, the bridge server or other computers as desired. Processed bridge codes can be deleted from the client computer or saved for reference.

The operator of the bridge server can produce revenue from the invention in 30 various ways. For example, a newspaper or other periodical can pay to have bridge codes assigned to its articles and related action commands stored in the data base. Further the action commands can refer the user to other sources and revenue can be collected from these sources. Advertisers can pay for a bridge code to be assigned to

their advertisements and for related action commands to be stored in the data base. For example, the action commands can drive the user to a Web page devoted for advertising or selling a product. Publisher's can pay to have bridge codes associated with published materials and action commands that direct the user to other materials published by the publisher, such as archive materials.

Further, entertainment producers can put bridge codes in programs for plays, movie and the like to direct the user to related information, promotional materials, directions to nearby restaurants, and the like. Gaming establishments can sue bridge codes to direct customers to handicapping data, online gaming and other related activities. Publishers of research materials can use bridge codes to direct users to related research materials. In each case, the operator of the bridge server can collect revenue based on bridge cod "hits", based on item (e.g. monthly), based on media materials delivered, based on products or services ordered, or in any fashion.

The invention has been described through a preferred embodiment. However various modifications can be made without departing from the scope of the invention as defined by the appended claims and legal equivalents.